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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/829,710	04/10/2001	Karthik Ramaswami	DCL1871/M4954	1784

7590  
Barry D. Josephs  
19 North Street  
Salem, MA 01970

05/07/2003

EXAMINER
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MERCADO, JULIAN A

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

16

<b>Office Action Summary</b>	<b>Application No.</b> 09/829,710	<b>Applicant(s)</b> RAMASWAMI ET AL.	
	<b>Examiner</b> Julian A. Mercado	<b>Art Unit</b> 1745	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) 44-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-43, drawn to the product, classified in class 429, subclass 27.
- II. Claims 44-47, drawn to the process of making, classified in class 29, subclass 623.5.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by another materially different process such as lamination or solvent-based coating methods.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Barry Josephs on May 2, 2003, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-43. Affirmation of this election must be made by applicant in replying to this Office action. Claims 44-47 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Objections***

Claims 5 and 35 are objected to because of the following informalities:

- a. In claim 5 at line 3, it is suggested to insert --surface-- after "edge".
- b. In claim 35 at line 2, it is suggested to change "and" to --an--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Wiacek (U.S. Pat. 4,014,211).

The examiner notes the Jepson format for independent claim 1, notwithstanding, regarding independent claim 1 and dependent claims thereto as noted below, Wiacek teaches a zinc/air cell having an anode [14], a cathode [12], the anode having an open end with an edge

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proximal to flange [38], the edge thereof being plated with a layer of protective material [44] so that the edge (and for that matter, entire section of flange [38]) is covered with the protective material. (col. 7 line 29-50, col. 2 line 14-35, also applies to dependent claims 2, 3, 5, 6) The examiner notes that the limitation “plated” has not been given patentable weight, as this process-of-making limitation does not give breadth or scope to the structural features of the article or product claim. It is also noted that the definition of “plated” (as defined in Webster’s Collegiate Dictionary) is defined as “to cover with an adherent layer mechanically, chemically, or electrically”. The protective material [44] as it is disclosed in Wiacek is deemed consistent with this definition. An electrically insulating material [22] resides between the cathode and anode. (applies to dependent claim 4)

Claim 1 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 50-134137, hereinafter JP ‘137.

See abstract and Figure, reference character [2].

Claim 1 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 54-60424, hereinafter JP ‘424

See abstract and Figure, reference character [2].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-23, 25, 26, 28, 29 and 31-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mansfield, Jr. et al. (U.S. Pat. 5,306,580) in view of either JP '137 or JP '424 as applied to claim 1 above.

The teachings of JP '137 and JP '424 are discussed above.

The examiner further notes the Jepsom format for independent claim 8. Regarding independent claims 1, 8, 13 and dependent claims thereto as noted below, Mansfield teaches a zinc/air cell having an anode [24], a cathode [2], the anode having an open end circumventing peripheral edge plated on both its outer and inner sides with layers of protective material [33, 34, 35, 37]. (col. 4 line 68 et seq., also applies to dependent claims 2, 3, 5, 6) An electrically insulating material [28] resides between the cathode and anode, notably residing between the anode circumferential peripheral edge. (applies to dependent claim 4) The protective material layers [33, 34, 35, 37] of elemental metal (disclosed as Cu, In, Ni and stainless steel, respectively) can be appreciated to have an exposed portion at the distal end of its circumventing peripheral edge. (col. 4 line 5 et seq., applies to dependent claim 9, 31) The cell is approximately 11.55 mm in diameter (converted from 0.455 inch) and has a height of 5.33 mm (converted from 0.210 inch). (col. 6 line 18-22, applies to dependent claims 15, 16) The cathode has holes [8] for allowing air to enter. (col. 5 line 5-7, applies to claim 29) The alloy material zinc may be alloyed with In and Bi, *inter alia*. (col. 2 line 31-37, col. 8 line 56-66, applies to claims 33 and 35) The cathode comprises manganese oxides, i.e. MnO<sub>2</sub> and carbon such as embedded carbon. (col. 5 line 9-16, applies to claim 37)

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Mansfield does not explicitly teach a metal coating over the anode cup surfaces and end edge surface portions. However, JP '137 and JP '424 teach coating anode cups, both at its inner and outer surfaces along with its exposed edge surfaces, with a metal coating, thus, the skilled artisan would find obvious to modify Mansfield by employing a metal coating over the anode cup surfaces and end edge surface portions for reasons such as prevention of electrolyte leakage and improved anode:sealant adhesion. (applies to independent claims 1, 8, 13 and dependent claims 7, 10, 11, 14, 17-19, 21, 22, 24, 25, 39 and 40)

Claim 20 is noted to recite the limitation "eliminates the electrochemical potential gradient at the surface of said peripheral edge thereby reducing the chance of electrolyte seepage from the cell". This limitation has not been given patentable weight, as it appears to the examiner to be drawn to a process-of-using limitation which does not give breadth or scope to the structural features of the article or product claim. Notwithstanding, the skilled artisan would find obvious that an improved anode cup to sealant adhesion would consequently reduce the chance of electrolyte seepage from the cell, as taught by JP '424, while JP '137 specifically discloses prevention of electrolyte leakage.

As to the thickness of the metal coating, absent of unexpected results it is asserted that this is an optimizable parameter for a result-effective variable. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) While it appears to the examiner (pending a full translation of JP '137 and JP '424) that the claimed thickness of the metal layer is disclosed, the thickness of an outer metal plating is considered result-effective as it directly effects continuity (or lack thereof) of the deposited layer. (see, for example, Mansfield at col. 3 line 31 et seq., applies to dependent claims 12, 23, 26 and 32) As to the amount of zinc or mercury, the amount thereof is similarly



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considered result-effective as it directly effects battery capacity and cell impedance. (applies to dependent claims 34, 36 and 38)

Claims 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mansfield, Jr. et al. (U.S. Pat. 5,306,580) in view of JP '137 as applied to claims 1-23, 25, 26, 28, 29 and 31- 40 above.

The teachings of JP '137 are discussed above.

As to the layer of protective material being copper, Mansfield is relied upon to specifically demonstrate mutual equivalence between Ni and Cu as both elemental metals are recognized as the preferred metal employed in the surface of the cell that faces the cell's interior. (col. 4 line 16-24) Thus, substitution of copper for the nickel metal layer disclosed in JP '137 would be an obvious substitution to the skilled artisan in recognition of copper's resistance to passivation and electrolyte attack. (applies to dependent claim 24)

As to a plurality of layers, the electrodeposition step employed in JP '137 would naturally flow to apply the metal coating layers in a plurality of discrete layers.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mansfield, Jr. et al. (U.S. Pat. 5,306,580) in view of either JP '137 or JP '424 as applied to claims 1-23, 25, 26, 28, 29 and 31- 40 above, and further in view of Jaggard (Re. 31,413)

The teachings of Mansfield, JP '137 and JP '424 are discussed above.

Mansfield does not explicitly teach an anode cup thickness between about 0.001 to 0.015 inches. However, Jaggard teaches an anode cup thickness at 0.010. (col. 6 line 48) The skilled

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artisan would find obvious to employ an anode cup of that thickness in Mansfield for reasons such as allowing adequate mutual interlocking of the cathode and anode.

Claims 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mansfield, Jr. et al. (U.S. Pat. 5,306,580) in view of either JP '137 or JP '424 as applied to claims 1-23, 25, 26, 28, 29 and 31- 40 above, and further in view of Gordon et al. (U.S. Pat. 6,060,196)

The teachings of Mansfield, JP '137 and JP '424 are discussed above.

Mansfield does not explicitly teach an anticorrosive coating of tin at the closed end or outer layer of the anode casing. However, Gordon teaches an anticorrosive coating on the outer layer of the anode casing. (col. 2 line 63-65) The skilled artisan would find obvious to employ an outer tin layer in Mansfield in order to circumvent atmospheric corrosion of the exposed anode cup housing.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. JP 53-84125 is cited to teach coating of the anode cup in a zinc-air battery.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian A. Mercado whose telephone number is (703) 305-0511. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to be "Jan", written over the date.

Jan  
May 3, 2003

A handwritten signature in black ink, appearing to be "Patrick Ryan", written above the printed name.

Patrick Ryan  
Supervisory Patent Examiner  
Technology Center 1700